AMENDMENTS TO THE CLAIMS

1.   (Currently Amended) A method for transmitting entity of a plurality of entities within a network to establish a data transmission within the network, the method comprises:

determining identity of a target entity of the plurality of entities;

determining transmission characteristics between the transmitting entity and the target entity;

determining a transmission convention based on the transmission characteristics;

combining data from two or more portions of a data packet into a single portion, the single portion containing less data than the two or more portions combined to reduce an amount of data transmitted in the data transmission;

providing the transmission convention to the target entity; and

wherein the transmission convention is selected in response to the determined transmission characteristics of a transmission path between the transmitting entity and the target entity prior to the data transmission.

2.   (Original) The method of claim 1 further comprises:

awaiting an acknowledgement of receipt of the transmission convention from the target entity;

when the acknowledgement is received within a predetermined time frame, processing data based on the transmission convention to produce transmit data; and

transmitting the transmit data to the target entity in accordance with the transmission convention.

3.   (Original) The method of claim 2 further comprises:

when the acknowledgement is not received within the predetermined time frame, resending the transmission convention to the target entity until the acknowledgement is received within the predetermined time frame or a retry sequence has been exhausted.

4.   (Original) The method of claim 2 further comprises at least one of:

awaiting an acknowledgement of receipt of the transmit data; and

receiving an error message from the target entity that the transmit data was not accurately received.

5.   (Previously Presented) The method of claim 1, wherein the determining the identity of the target entity further comprises:

receiving a data packet that includes a destination address, wherein the destination address directly or indirectly identifies the target entity.

6.   (Previously Presented) The method of claim 1, wherein the determining the identity of the target entity further comprises:

generating a data packet that includes a destination address, wherein the destination address directly or indirectly identifies the target entity.

7.   (Original) The method of claim 1, wherein the determining the transmission characteristics further comprises, for a given data transmission from the transmitting entity to the target entity, at least one of:

determining transmission resources available between the transmitting and target entities to produce available transmission resources;

determining desired data rate of the given data transmission;

determining transmission distance between the transmitting entity and the target entity;

determining encoding capabilities of the transmitting entity and of the target entity;

determining whether the target entity is a termination node or an intermediate node for the given data transmission; and

determining characteristics of the available transmission resources.

8.   (Original) The method of claim 7, wherein the determining the transmission

convention further comprises at least one of:

  determining encoding scheme for the given data transmission;

  determining a modulation scheme for the given data transmission;

  determining a number of the available transmission resources to support the given data transmission;

  adjusting the data rate of the given data transmission; and

  selecting a particular type of path for supporting the given data transmission.

9.   (Original) The method of claim 8, wherein the determining the encoding scheme comprises at least one of:

  determining multilevel encoding for the given data transmission;

  determining non return to zero (NRZ) encoding for the given data transmission;

  determining Manchester encoding for the given data transmission;

  determining block encoding for the given data transmission; and

  determining nB/mB encoding for the given data transmission, where n < m.

10.   (Original) The method of claim 8, wherein the determining the modulation scheme further comprises at least one of:

  determining pulse position modulation (PPM) for the given data transmission;

  determining time division multiplexing (TDM) for the given data transmission;

  determining frequency division multiplexing (FDM) for the given data transmission;

  determining pulse amplitude modulation (PAM) for the given data transmission;

  determining amplitude shift keying (ASK) for the given data transmission;

  determining frequency shift keying (FSK) for the given data transmission;

  determining phase shift keying (PSK) for the given data transmission;

  determining quadrature phase shift keying (QPSK) for the given data transmission; and

  determining carrier sense multiple access for the given data transmission.

11.   (Original) The method of claim 8, wherein the determining the number of the available transmission resources to support the given data transmission further comprises:

determining whether the given data transmission will be a serial transmission or a parallel transmission based, at least in part, on the data rate of the given data transmission, the transmission distance between the transmitting entity and the target entity, and the particular type of path for supporting the given data transmission.

12.   (Original) The method of claim 1, wherein the determining the transmission characteristics further comprises, for a given data transmission:

accessing a look-up table to obtain at least one of:

transmission resources available between the transmitting and target entities to produce available transmission resources,

desired data rate of the given data transmission, transmission distance between the transmitting entity and the target entity,

encoding capabilities of the transmitting entity and of the target entity, and

characteristics of the available transmission resources.

13.   (Original) The method of claim 1, wherein the determining the transmission convention further comprises, for a given data transmission:

accessing a look-up table to obtain at least one of:

encoding scheme for the given data transmission,

modulation scheme for the given data transmission,

number of the available transmission resources to support the given data transmission, desired data rate of the given data transmission, and

particular type of path for supporting the given data transmission.

14.   (Original) The method of claim 1, wherein the providing the transmission convention further comprises at least one of:

encoding the transmission convention utilizing a default encoding scheme to produce encoding transmission convention;

setting a field within overhead portion of data packet to indicate the transmission convention; and

transmitting a unique message via a set-up bus indicating the transmission convention.

15.   (Currently Amended) A method for establishing a data transmission within a network that includes a plurality of entities, the method comprises:

identifying a pending data transmission between a transmitting entity of the plurality of entities and a target entity of the plurality of entities;

determining transmission characteristics between the transmitting entity and the target entity;

determining a transmission convention based on the transmission characteristics;

combining data from two or more portions of a data packet into a single portion, the single portion containing less data than the two or more portions combined to reduce an amount of data transmitted in the data transmission;

providing the transmission convention to the transmitting entity and the target entity; and

wherein the transmission convention is selected in response to the determined transmission characteristics of a transmission path between the transmitting entity and the target entity prior to the data transmission.

16.   (Original) The method of claim 15, wherein the identifying a pending data transmission further comprises:

receiving an indication from the transmitting entity.

17.   (Original) The method of claim 15, wherein the identifying a pending data transmission further comprises:

receiving a data packet relating to the data transmission from a source external to the network;

interpreting the data packet to identify the transmitting entity for initial receipt of

the data packet within the network; and

receiving an indication from the transmitting entity of the data transmission with the target entity.

18.   (Original) The method of claim 15, wherein the determining the transmission characteristics further comprises at least one of:

determining transmission resources available between the transmitting and target entities to produce available transmission resources;

determining desired data rate of the given data transmission;

determining transmission distance between the transmitting entity and the target entity;

determining encoding capabilities of the transmitting entity and of the target entity;

determining whether the target entity is a termination node or an intermediate node for the given data transmission; and

determining characteristics of the available transmission resources.

19.   (Original) The method of claim 18, wherein the determining the transmission convention further comprises at least one of:

determining encoding scheme for the data transmission;

determining a modulation scheme for the data transmission;

determining a number of the available transmission resources to support the data transmission;

adjusting the data rate of the data transmission; and

selecting a particular type of path for supporting the data transmission.

20.   (Original) The method of claim 15, wherein the determining the transmission characteristics further comprises:

accessing a look-up table to obtain at least one of:

transmission resources available between the transmitting and target entities to produce available transmission resources,

desired data rate of the given data transmission, transmission distance
between the transmitting entity and the target entity,

encoding capabilities of the transmitting entity and of the target entity, and

characteristics of the available transmission resources.

21.   (Original) The method of claim 15, wherein the determining the transmission
convention further comprises:

accessing a look-up table to obtain at least one of:

encoding scheme for the given data transmission,

modulation scheme for the given data transmission,

number of the available transmission resources to support the given data
transmission,

desired data rate of the given data transmission, and

particular type of path for supporting the given data transmission.

22.   (Original) The method of claim 15, wherein the providing the transmission
convention further comprises at least one of:

encoding the transmission convention utilizing a default encoding scheme to
produce encoding transmission convention;

transmitting a unique message via a set-up bus indicating the transmission
convention.

23.   (Currently Amended) A method for transmitting entity of a plurality of entities
within a network to establish a data transmission within the network, the method
comprises:

identifying a target entity of the plurality of entities regarding the data
transmission;

determining bandwidth of the data transmission;

determining number of transmissions resources based on the bandwidth of the
data transmission and a transmission convention; [[and]]

optionally allocating the data transmission across a plurality of data paths, each

<u>data path transmitting data at a bandwidth that is proportional to a ratio of the</u>

<u>bandwidth of the data transmission to the determined number of transmission</u>

<u>resources; and</u>

accessing the number of transmission resources to [[transmit]] <u>provide each</u>

data <u>path</u> to the target entity.

24.   (Original) The method of claim 23, wherein the determining the bandwidth of

the data transmission further comprises at least one of:

identifying transmission bandwidth capabilities of the transmitting entity; and

identifying reception bandwidth capabilities of the target entity.

25.   (Original) The method of claim 23, wherein the determining the number of

transmission resources further comprises at least one of:

identifying the transmission convention as an individual transmission

convention for data transmissions from the transmitting entity;

identifying the transmission convention as a standard transmission convention

for the network; and

identifying the transmission convention uniquely for the data transmission.

26.   (Original) The method of claim 23, wherein the accessing the number of

transmission resources further comprises at least one of:

utilizing carrier sensed multi access protocol to access each of the transmission

resources;

receiving access to the transmission resources in response to receiving a

token; and

receiving access to the transmission resources in accordance with division

multiplexing.

27.   (Original) The method of claim 23, wherein the determining the number of

transmission resources further comprises:

determining characteristics of the transmission resources between the

transmitting entity and the target entity; and

optimizing the transmission convention based on the characteristics of the transmission resources.

28.   (Currently Amended) A method for establishing a data transmission within a network that includes a plurality of entities, the method comprises:

identifying a transmitting entity and a target entity of the plurality of entities regarding the data transmission;

determining bandwidth of the data transmission;

determining number of transmissions resources based on the bandwidth of the data transmission and a transmission convention; [[and]]

optionally allocating the data transmission across a plurality of data paths, each data path transmitting data at a bandwidth that is proportional to a ratio of the bandwidth of the data transmission to the determined number of transmission resources; and

accessing the number of transmission resources to [[transmit]] provide each data path to the target entity.

29.   (Original) The method of claim 28, wherein the determining the bandwidth of the data transmission further comprises at least one of:

identifying transmission bandwidth capabilities of the transmitting entity; and

identifying reception bandwidth capabilities of the target entity.

30.   (Original) The method of claim 28, wherein the determining the number of transmission resources further comprises at least one of:

identifying the transmission convention as an individual transmission convention for data transmissions from the transmitting entity;

identifying the transmission convention as a standard transmission convention for the network; and

identifying the transmission convention uniquely for the data transmission.

31.   (Original) The method of claim 28, wherein the accessing the number of transmission resources further comprises at least one of:

utilizing carrier sensed multi access protocol to access each of the transmission resources;

receiving access to the transmission resources in response to receiving a token; and

receiving access to the transmission resources in accordance with division multiplexing.

32.   (Original) The method of claim 28, wherein the determining the number of transmission resources further comprises:

determining characteristics of the transmission resources between the transmitting entity and the target entity; and

optimizing the transmission convention based on the characteristics of the transmission resources.

33.   (Currently Amended) A method for establishing a data transmission within a network that includes a plurality of entities, the method comprises:

establishing configuration communication between a transmitting entity and a target entity of the plurality of entities;

determining transmission characteristics between the transmitting entity and the target entity;

determining at least one transmission convention based on the transmission characteristics;

combining data from two or more portions of a data packet into a single portion, the single portion containing less data than the two or more portions combined to reduce an amount of data transmitted in the data transmission;

maintaining the at least one transmission convention by the transmitting and target entities; and

wherein the at least one transmission convention is selected in response to the determined transmission characteristics of a transmission path between the

transmitting entity and the target entity prior to the data transmission.

34.   (Original) The method of claim 33, wherein the establishing configuration communication further comprises at least one of:

transmitting test data from the transmitting entity to the target entity at varying bandwidths;

transmitting test data over each connection between the transmitting entity and the target entity;

transmitting test data from the transmitting entity to the target entity using various encoding schemes; and

transmitting test data from the transmitting entity to the target entity using various modulation schemes.

35.   (Previously Presented) The method of claim 34 further comprises:

deriving a table of transmission conventions based on at least one of: the varying bandwidths, characteristics of each connection, the various encoding schemes, and the various modulation schemes.

36.   (Original) The method of claim 35, wherein the determining the at least one transmission convention further comprises:

selecting the at least one transmission convention based on at least one of: available connections between the transmitting entity and the target entity, bandwidth of data, and characteristics of the available connections.

37.   (Currently Amended) A transmitting entity within a network comprises:

processing module; and

memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to establish a data transmission within the network by:

determining identity of a target entity of the plurality of entities;

determining transmission characteristics between the transmitting entity

and the target entity;

determining a transmission convention based on the transmission characteristics;

combining data from two or more portions of a data packet into a single portion, the single portion containing less data than the two or more portions combined to reduce an amount of data transmitted in the data transmission;

providing the transmission convention to the target entity; and

wherein the transmission convention is selected in response to the determined transmission characteristics of a transmission path between the transmitting entity and the target entity prior to the data transmission.

38. (Original) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to:

await an acknowledgement of receipt of the transmission convention from the target entity;

when the acknowledgement is received within a predetermined time frame, process data based on the transmission convention to produce transmit data; and

transmit the transmit data to the target entity in accordance with the transmission convention.

39. (Previously Presented) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to determine the identity of the target entity by:

receiving a data packet that includes a destination address, wherein the destination address directly or indirectly identifies the target entity.

40. (Previously Presented) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to determine the identity of the target entity by:

generating a data packet that includes a destination address, wherein the destination address directly or indirectly identifies the target entity.

41.   (Original) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission characteristics, for a given data transmission from the transmitting entity to the target entity, by at least one of:

determining transmission resources available between the transmitting and target entities to produce available transmission resources;

determining desired data rate of the given data transmission;

determining transmission distance between the transmitting entity and the target entity;

determining encoding capabilities of the transmitting entity and of the target entity;

determining whether the target entity is a termination node or an intermediate node for the given data transmission; and

determining characteristics of the available transmission resources.

42.   (Original) The transmitting entity of claim 41, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission convention by at least one of:

determining encoding scheme for the given data transmission;

determining a modulation scheme for the given data transmission;

determining a number of the available transmission resources to support the given data transmission;

adjusting the data rate of the given data transmission; and

selecting a particular type of path for supporting the given data transmission.

43.   (Original) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission characteristics for a given data transmission by:

accessing a look-up table to obtain at least one of:

transmission resources available between the transmitting and target entities to

produce available transmission resources,

desired data rate of the given data transmission, transmission distance between the transmitting entity and the target entity,

encoding capabilities of the transmitting entity and of the target entity, and

characteristics of the available transmission resources.

44. (Original) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission convention for a given data transmission by:

accessing a look-up table to obtain at least one of:

encoding scheme for the given data transmission,

modulation scheme for the given data transmission,

number of the available transmission resources to support the given data transmission,

desired data rate of the given data transmission, and

particular type of path for supporting the given data transmission.

45. (Original) The transmitting entity of claim 37, wherein the memory further comprises operational instructions that cause the processing module to provide the transmission convention by at least one of:

encoding the transmission convention utilizing a default encoding scheme to produce encoding transmission convention;

setting a field within overhead portion of data packet to indicate the transmission convention; and

transmitting a unique message via a set-up bus indicating the transmission convention.

46. (Currently Amended) An apparatus for establishing a data transmission within a network that includes a plurality of entities, the apparatus comprises:

processing module; and

memory operably coupled to the processing module, wherein the memory

includes operational instructions that cause the processing module to:

identify a pending data transmission between a transmitting entity of the plurality of entities and a target entity of the plurality of entities;

determine transmission characteristics between the transmitting entity and the target entity;

determine a transmission convention based on the transmission characteristics;

combine data from two or more portions of a data packet into a single portion, the single portion containing less data than the two or more portions combined to reduce an amount of data to be transmitted in the pending data transmission;

provide the transmission convention to the transmitting entity and the target entity; and

wherein the transmission convention is selected in response to the determined transmission characteristics of a transmission path between the transmitting entity and the target entity prior to the data transmission.

47.   (Original) The apparatus of claim 46, wherein the memory further comprises operational instructions that cause the processing module to identify a pending data transmission by:

receiving an indication from the transmitting entity.

48.   (Original) The apparatus of claim 46, wherein the memory further comprises operational instructions that cause the processing module to identify a pending data transmission by:

receiving a data packet relating to the data transmission from a source external to the network;

interpreting the data packet to identify the transmitting entity for initial receipt of the data packet within the network; and

receiving an indication from the transmitting entity of the data transmission with the target entity.

49.   (Original) The apparatus of claim 46, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission characteristics by at least one of:

determining transmission resources available between the transmitting and target entities to produce available transmission resources;

determining desired data rate of the given data transmission;

determining transmission distance between the transmitting entity and the target entity;

determining encoding capabilities of the transmitting entity and of the target entity;

determining whether the target entity is a termination node or an intermediate node for the given data transmission; and

determining characteristics of the available transmission resources.

50.   (Original) The apparatus of claim 49, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission convention by at least one of:

determining encoding scheme for the data transmission;

determining a modulation scheme for the data transmission;

determining a number of the available transmission resources to support the data transmission;

adjusting the data rate of the data transmission; and

selecting a particular type of path for supporting the data transmission.

51.   (Original) The apparatus of claim 46, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission characteristics by:

accessing a look-up table to obtain at least one of:

transmission resources available between the transmitting and target entities to produce available transmission resources,

desired data rate of the given data transmission, transmission distance between the transmitting entity and the target entity,

encoding capabilities of the transmitting entity and of the target entity, and

characteristics of the available transmission resources.

52.   (Original) The apparatus of claim 46, wherein the memory further comprises operational instructions that cause the processing module to determine the transmission convention by:

accessing a look-up table to obtain at least one of:

encoding scheme for the given data transmission,

modulation scheme for the given data transmission,

number of the available transmission resources to support the given data transmission,

desired data rate of the given data transmission, and

particular type of path for supporting the given data transmission.

53.   (Original) The apparatus of claim 46, wherein the memory further comprises operational instructions that cause the processing module to provide the transmission convention by at least one of:

encoding the transmission convention utilizing a default encoding scheme to produce encoding transmission convention;

transmitting a unique message via a set-up bus indicating the transmission convention.

54.   (Currently Amended) A transmitting entity within a network comprises:

processing module; and

memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to establish a data transmission within the network by:

identifying a target entity of the plurality of entities regarding the data

transmission;

determining bandwidth of the data transmission;

determining number of transmissions resources based on the bandwidth of the data transmission and a transmission convention; [[and]]

optionally allocating the data transmission into a plurality of data paths, each data path transmitting data at a bandwidth that is proportional to a ratio of the bandwidth of the data transmission to the determined number of transmission resources; and

accessing the number of transmission resources to [[transmit]] provide each data path to the target entity.

55. (Original) The transmitting entity of claim 54, wherein the memory further comprises operational instructions that cause the processing module to determine the bandwidth of the data transmission by at least one of:

identifying transmission bandwidth capabilities of the transmitting entity; and

identifying reception bandwidth capabilities of the target entity.

56. (Original) The transmitting entity of claim 54, wherein the memory further comprises operational instructions that cause the processing module to determine the number of transmission resources by at least one of:

identifying the transmission convention as an individual transmission convention for data transmissions from the transmitting entity;

identifying the transmission convention as a standard transmission convention for the network; and

identifying the transmission convention uniquely for the data transmission.

57. (Original) The transmitting entity of claim 54, wherein the memory further comprises operational instructions that cause the processing module to access the number of transmission resources by at least one of:

utilizing carrier sensed multi access protocol to access each of the transmission resources;

receiving access to the transmission resources in response to receiving a token; and

receiving access to the transmission resources in accordance with division multiplexing.

58.   (Original) The transmitting entity of claim 54, wherein the memory further comprises operational instructions that cause the processing module to determine the number of transmission resources by:

determining characteristics of the transmission resources between the transmitting entity and the target entity; and

optimizing the transmission convention based on the characteristics of the transmission resources.

59.   (Currently Amended) An apparatus for establishing a data transmission within a network that includes a plurality of entities, the apparatus comprises:

processing module; and

memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

identify a transmitting entity and a target entity of the plurality of entities regarding the data transmission;

determine bandwidth of the data transmission;

determine number of transmissions resources based on the bandwidth of the data transmission and a transmission convention; [[and]]

optionally allocate the data transmission into a plurality of data paths, each data path transmitting data at a bandwidth that is proportional to a ratio of the bandwidth of the data transmission to the determined number of transmission resources; and

access the number of transmission resources to [[transmit]] provide each data path to the target entity.

60.   (Original) The apparatus of claim 59, wherein the memory further comprises

operational instructions that cause the processing module to determine the bandwidth of the data transmission by at least one of:

identifying transmission bandwidth capabilities of the transmitting entity; and

identifying reception bandwidth capabilities of the target entity.

61. (Original) The apparatus of claim 59, wherein the memory further comprises operational instructions that cause the processing module to determine the number of transmission resources by at least one of:

identifying the transmission convention as an individual transmission convention for data transmissions from the transmitting entity;

identifying the transmission convention as a standard transmission convention for the network; and

identifying the transmission convention uniquely for the data transmission.

62. (Original) The apparatus of claim 59, wherein the memory further comprises operational instructions that cause the processing module to access the number of transmission resources by at least one of:

utilizing carrier sensed multi access protocol to access each of the transmission resources;

receiving access to the transmission resources in response to receiving a token; and

receiving access to the transmission resources in accordance with division multiplexing.

63. (Original) The apparatus of claim 59, wherein the memory further comprises operational instructions that cause the processing module to determine the number of transmission resources by:

determining characteristics of the transmission resources between the transmitting entity and the target entity; and

optimizing the transmission convention based on the characteristics of the transmission resources.

64.   (Currently Amended) An apparatus for establishing a data transmission within a network that includes a plurality of entities, the apparatus comprises:

processing module; and

memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

establish configuration communication between a transmitting entity and a target entity of the plurality of entities;

determine transmission characteristics between the transmitting entity and the target entity;

determine at least one transmission convention based on the transmission characteristics;

combine data from two or more portions of a data packet into a single portion, the single portion containing less data than the two or more portions combined to reduce an amount of data transmitted in the data transmission;

maintain the at least one transmission convention by the transmitting and target entities; and

wherein the at least one transmission convention is selected in response to the determined transmission characteristics of a transmission path between the transmitting entity and the target entity prior to the data transmission.

65.   (Original) The apparatus of claim 64, wherein the memory further comprises operational instructions that cause the processing module to establish configuration communication by at least one of:

transmitting test data from the transmitting entity to the target entity at varying bandwidths;

transmitting test data over each connection between the transmitting entity and the target entity;

transmitting test data from the transmitting entity to the target entity using various encoding schemes; and

transmitting test data from the transmitting entity to the target entity using

various modulation schemes.

66.   (Previously Presented) The apparatus of claim 65, wherein the memory further comprises operational instructions that cause the processing module to:

derive a table of transmission conventions based on at least one of: the varying bandwidths, characteristics of each connection, the various encoding schemes, and the various modulation schemes.

67.   (Original) The apparatus of claim 66, wherein the memory further comprises operational instructions that cause the processing module to determine the at least one transmission convention by:

selecting the at least one transmission convention based on at least one of: available connections between the transmitting entity and the target entity, bandwidth of data, and characteristics of the available connections.